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Update: Avoidable Hospitalizations for Ambulatory-Care-Sensitive Conditions in Montana Adults, 2004-2012[1]

Cody L. Custis, MS, Hospital Discharge Epidemiologist
Carol Ballew, PhD, Senior Public Health Epidemiologist

Hospitalizations for ambulatory-care-sensitive conditions (ACSCs) may be avoided with high-quality primary and preventive care. The Agency for Healthcare Research and Quality (AHRQ) uses 16 Prevention Quality Indicators (PQIs) to monitor efficacy of primary and preventive care for adults.[2] Nationally, 12.0% of hospitalizations in 2010 were for selected conditions that might have been managed on an outpatient basis; rural residents and the uninsured were more likely to be hospitalized for PQIs.[3,4]

This report updates our assessments of August 2010 and March 2011.[5] We collapsed related indicators into four overall categories: *Diabetes* (uncontrolled diabetes, short-term complications, long-term complications, and lower extremity amputations attributed to diabetes); *Cardiovascular* (hypertension, congestive heart failure, and angina without a procedure); *Respiratory* (adult asthma and COPD); and *Acute Conditions* (dehydration, bacterial pneumonia, and urinary tract infection). We computed age-adjusted adult (18 years and older) admission rates for Montana residents for these four categories using version 4.5 of the technical specifications provided by AHRQ.[6]

Ambulatory-care-sensitive conditions accounted for a total of 13.6% of Montana admissions from 2004 to 2012.[7] Acute conditions were the most common classification of ACSC, followed by circulatory, respiratory, and diabetes related conditions (Figure 1).[8] Bacterial pneumonia was the most common acute condition; congestive heart failure was the most common circulatory condition. Diabetes related condition admissions were mostly split between short-term and long-term complications.

Potentially avoidable hospitalizations for chronic conditions are costly, accounting for 7.7% of inpatient charges from 2008 to 2012, for a total of $515 million over five years (Figure 2).[9] Most of the charges ($315 million) were borne by Medicare. Average charges per hospitalization ranged from $11,800 for acute and respiratory complications to $16,400 for diabetes complications.

For all causes, hospitalization rates were highest for those aged 65 years or more and lowest for those aged 18 through 44 years (Figure 3). Acute conditions were the most common reason for hospitalization for all age groups. For those aged 18 through 44 years, diabetes related condition admissions accounted for 35% of potentially avoidable

[1] The Montana Hospital Discharge Data System (MHDDS) receives annual de-identified hospital discharge data sets through a Memorandum of Agreement with the Montana Hospital Association. Most hospitals in Montana participate in voluntary reporting from their Uniform Billing forms, version 2004. The MHDDS receives information on more than 90% of inpatients admissions in the states. It does not receive data on emergency department visits or outpatient procedures at this time.
[2] http://www.ahrq.gov/data/hcup/factbk5b.htm
[3] Centers for Disease Control and Prevention, National Center for Health Statistics. National Hospital Discharge Survey Public Use Data Files, 2010**.** url: http://www.cdc.gov/nchs/nhds**.h**tm.
[4] Finegan MS et al. 2010. *Health Services Manag Res* 23:66-75; Chang CF, Pope RA. 2009. *Pub Health Rep* 124:127-137; Basu J et al. 2004 *Health Serv Res* 39:489-510.
[5] Custis C, Ballew C. 2010. Potentially Avoidable Hospitalizations for Chronic Disease in Montana, 2000-2008; Office of Epidemiology and Scientific Support. 2011. Montana Prevention Quality Indicators 2000-2009 Available at http://www.dphhs.mt.gov/publichealth/epidemiology/mthdds/index.shtml
[6] May 2013; http://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec.aspx;
[7] PQI hospitalizations exclude transfers and obstetric / newborn admissions; comparisons are made using the same criteria.
[8] Color schemes are based on ColorBrewer (http://colorbrewer2.org/).
[9] Charge data was first available in 2008. Charges are calculated on a crude basis.

hospitalizations, diabetes related condition admissions accounted for only 17% and 5% of potentially avoidable hospitalizations to those aged 45 through 64 years and aged 65 years or more.

Age adjusted admission rates for diabetes and circulatory related conditions were higher for males, while rates for respiratory and acute conditions were higher for females (Figure 4).[10]

Nationally, rural residents are hospitalized at a higher rate than urban residents. Montana has only one county that fits the national definition of Urban (Yellowstone County), but 10 counties classified as Rural and 45 classified as Frontier.[11] We therefore compared Urban/Rural counties to Frontier counties. In Montana, residents of frontier counties are hospitalized at similar rates for chronic ACSCs, but at higher rates for all three acute ASCSs: dehydration, bacterial pneumonia, and urinary tract infection (Figure 5). The relatively small differences between frontier versus urban and rural county residents for chronic ACSCs hospitalization rates are a positive sign that the quality of outpatient health management for residents in frontier counties is comparable to that for residents of urban/rural counties. For acute conditions the time from onset of symptoms to severe illness and complications may be short. Frontier county residents may have difficulty obtaining timely diagnosis and treatment for these conditions in non-inpatient settings such as physician offices or urgent care facilities. In such circumstances potentially preventable hospitalization may occur.

Age-adjusted hospitalization rates for acute, circulatory, and respiratory conditions substantially deceased from 2004 to 2012, while hospitalization rates for diabetes related conditions have remained relatively stable (Figure 6). In contrast, the prevalence of circulatory conditions, respiratory conditions such as asthma, and diabetes increased among Montanans.[12]

Summary:

Ambulatory-care-sensitive conditions are an important measure not just of disease, but also of the quality of outpatient care and health management. Each admission is a combination of the health of the population, and the ability of the healthcare system to properly manage that health. The declining admission rates for ACSCs reflect a shift in the healthcare system, as ACSCs are managed through outpatient, rather than inpatient, treatment.

For more information about Montana Hospital Discharge Data System,
please contact Cody Custis, MS, Hospital Discharge Epidemiologist
at 406-444-6947 or ccustis@mt.gov
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Please visit our website at
http://www.dphhs.mt.gov/publichealth/epidemiology/index.shtml

[10] Error bars for age adjusted rates are 95% confidence intervals using the Fay Feuer method. Fay MP, Feuer EJ. 1997. Confidence intervals for directly standardized rates: a method based on the gamma distribution. *Stat in Med* Apr 15;16(7):791-801.
[11] Listing of Montana's urban, rural, and frontier counties can be found in: Montana Department of Public Health and Human Services, Quality Assurance Division. 2011. Montana's Rural Health Plan, July 2011
[12] Montana Behavioral Risk Factor Surveillance System, 2004-2010. Because of changes in methodology, BRFSS results from 2011and after should not be compared to results from before.

Figure 1. Hospitalizations for Selected Ambulatory-Care-Sensitive Conditions, Montana Residents, Montana Hospital Discharge Data System 2004-2012

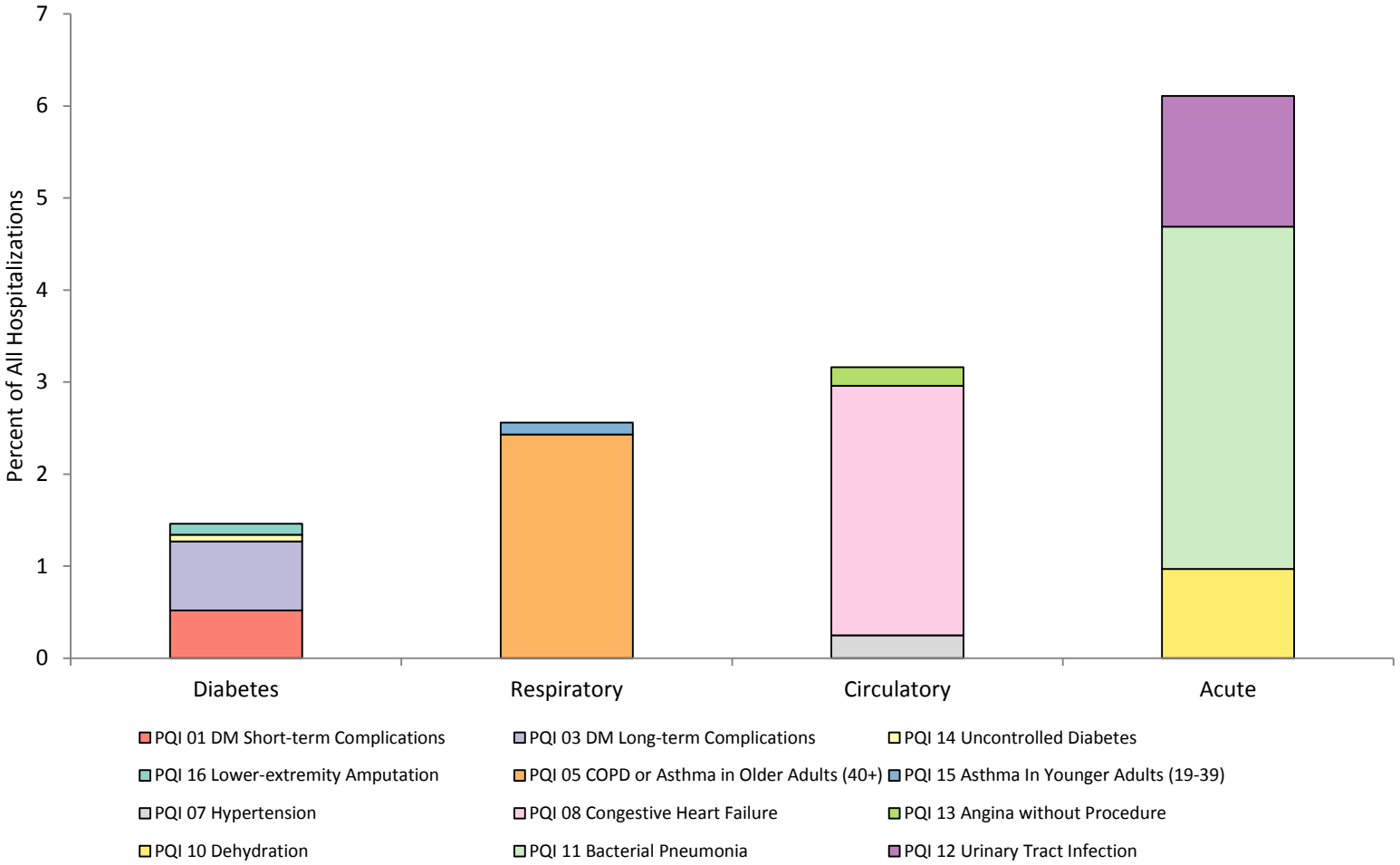

Figure 2. Charges by Payer for Selected Ambulatory Sensitive Conditions, Montana Residents, Montana Hospital Discharge Data System, 2008-2012

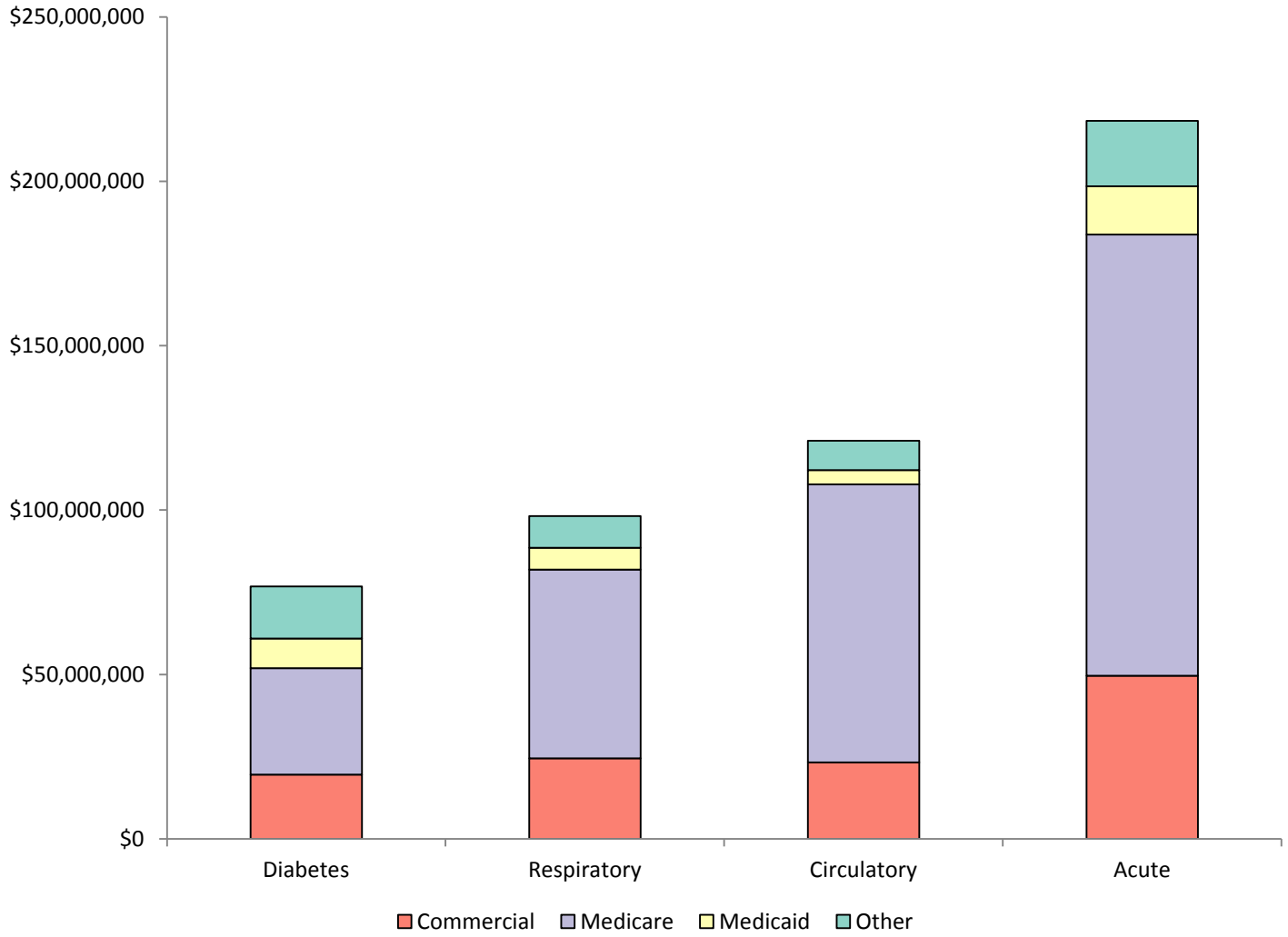

Figure 3. Age Specific Hospitalization Rates for Selected Ambulatory-Care-Sensitive Conditons By Age Group, Montana Residents, Montana Hospital Discharge Data System, 2004-2012

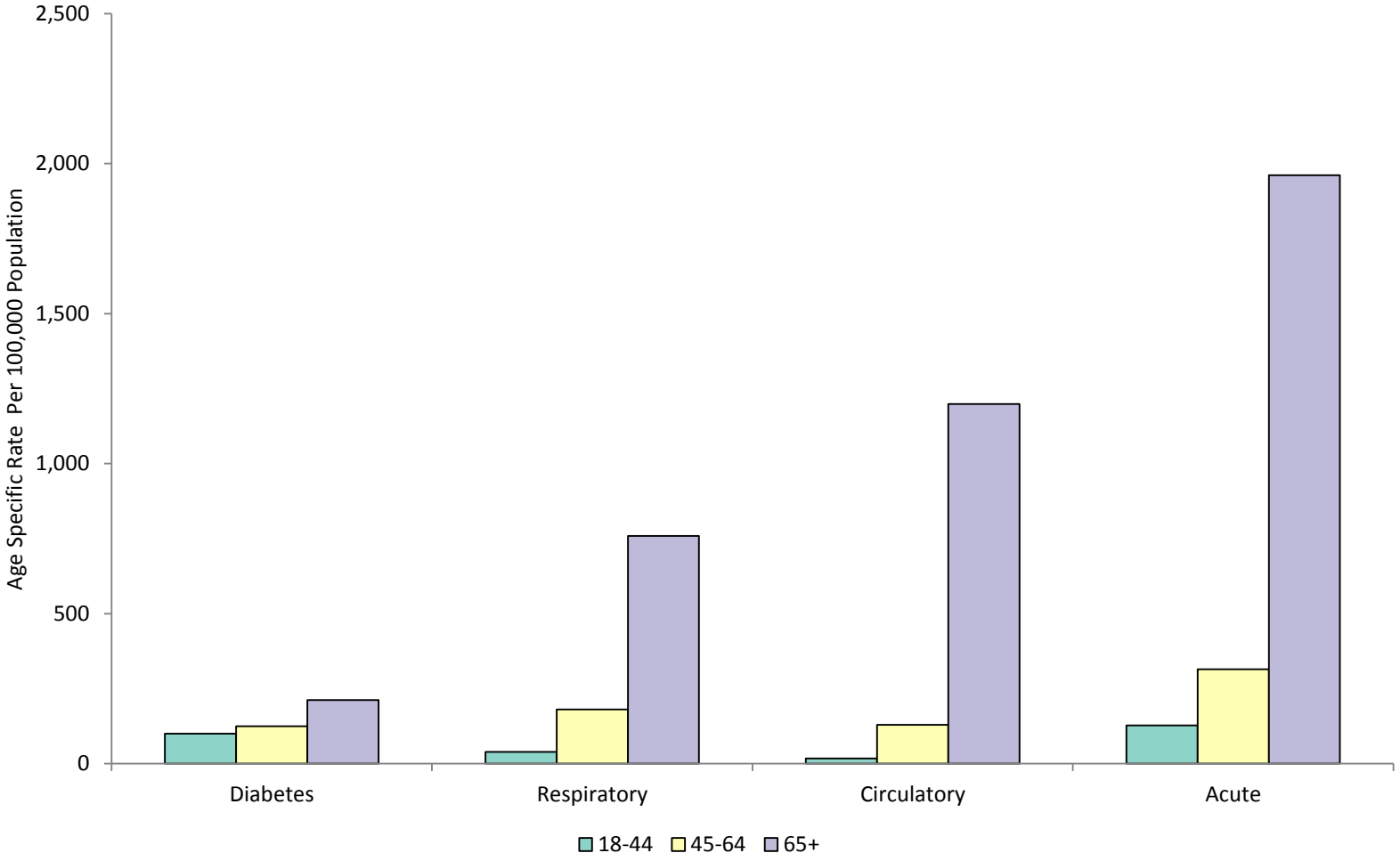

Figure 4. Age Adjusted Hospitalization Rates for Selected Ambulatory-Care-Sensitive Conditons By Sex, Montana Residents, Montana Hospital Discharge Data System, 2004-2012

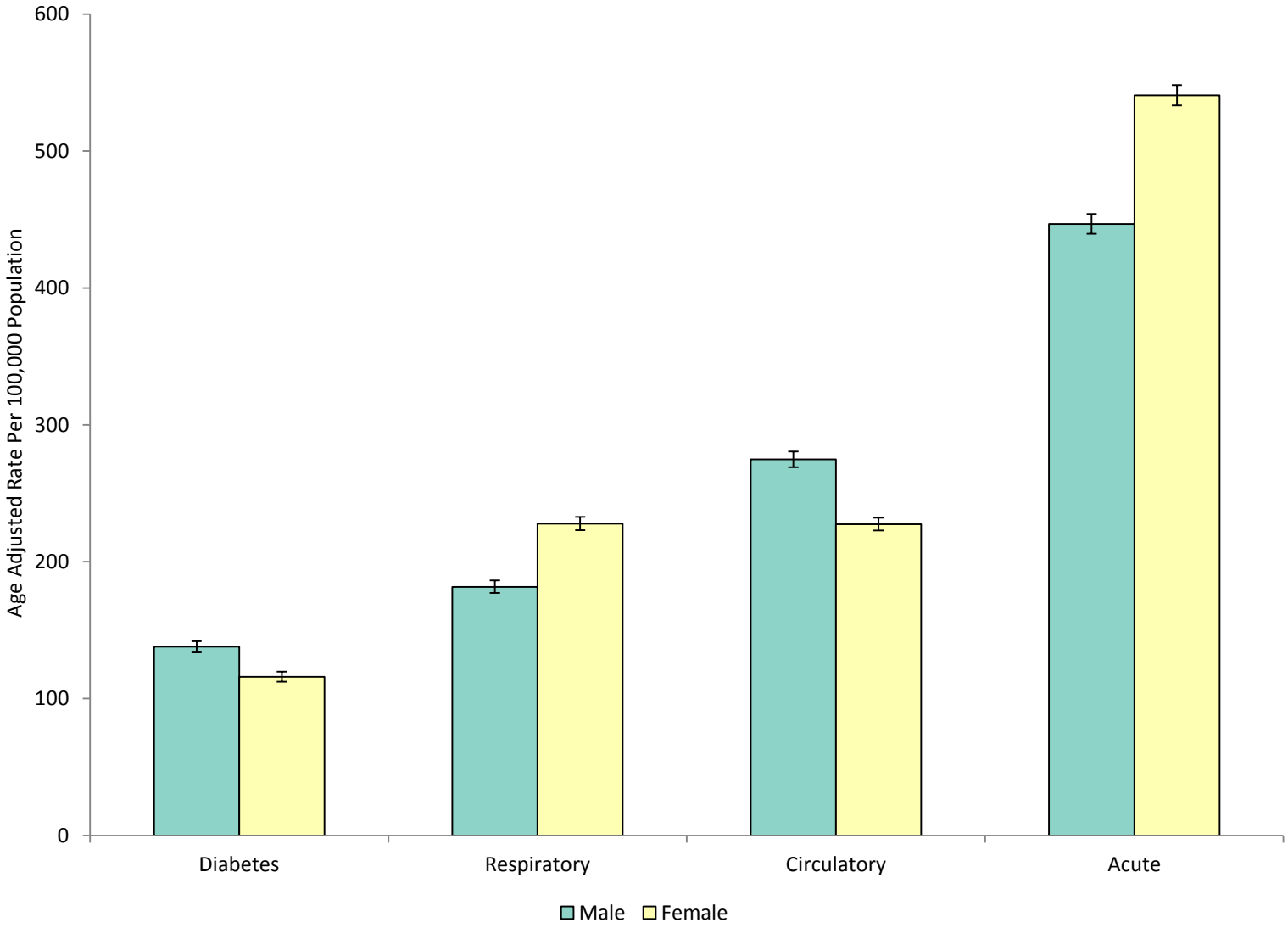

Figure 5. Age Adjusted Hospitalization Rates for Selected Ambulatory-Care-Sensitive Conditons By Montana County Of Residence, Montana Hospital Discharge Data System, 2004-2012

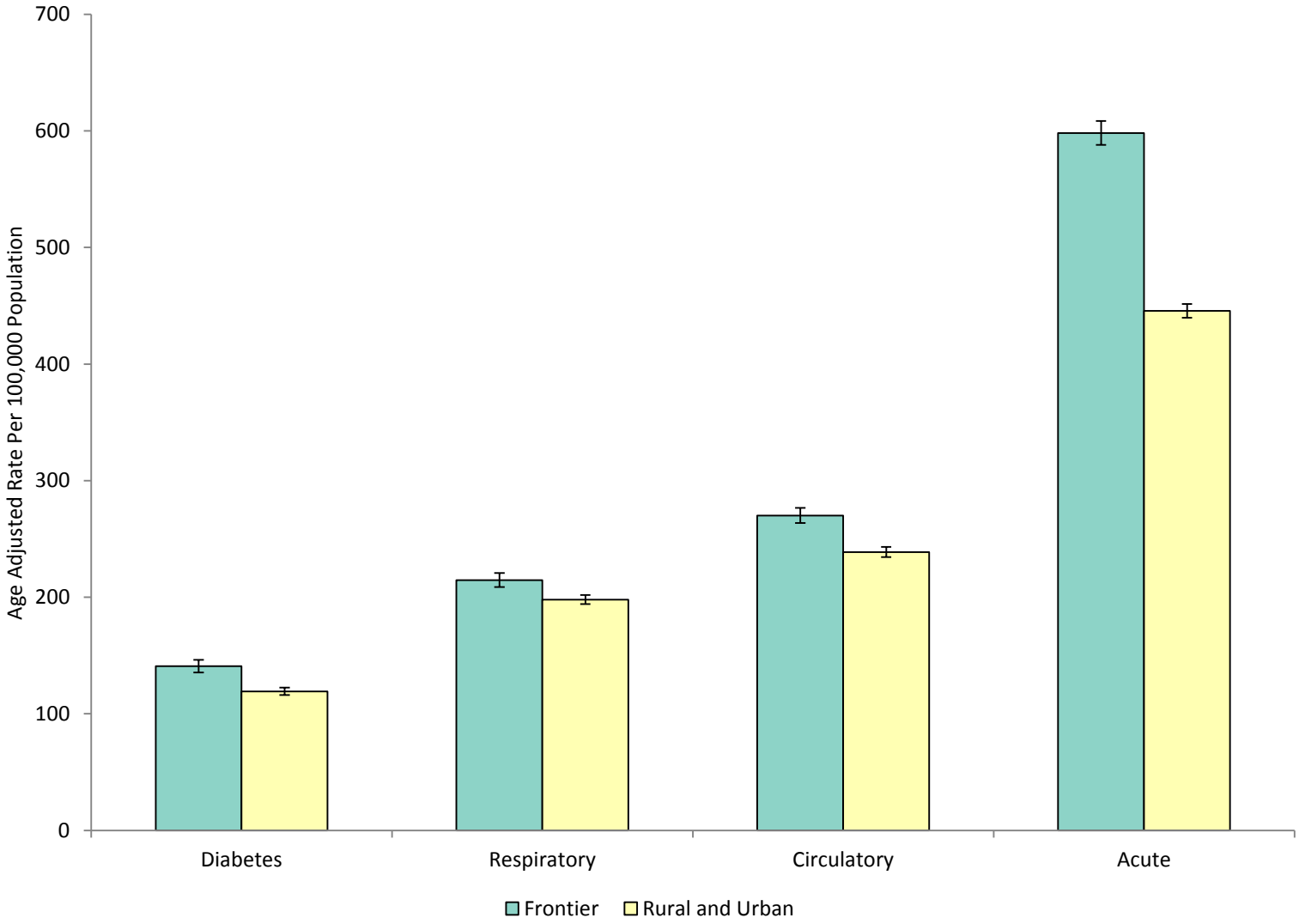

Figure 6. Age Adjusted Hospitalization Rates for Selected Ambulatory-Care-Sensitive Condtions, Montana Residents, Montana Hospital Discharge Data System, 2004-2012